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ABSTRACT

Swallowing problems can result from a catastrophic illness or injury, and the family's role is very important in implementing the swallowing precautions recommended by the rehabilitation team. Explained in this pamphlet are the stages of the normal swallowing sequence, symptoms of a swallowing disorder, medical conditions associated with swallowing disorders, treatments designed to improve swallowing, videoflouroscopy, alternative means of feeding, and the role of family members. Treatments to improve swallowing include exercises; thermal stimulation; patient positioning; and monitoring the consistency of food and liquids, amount of food and liquid taken per swallow, time between swallows, sensory cues, and environmental distractions. (JDD)

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Swallowing Disorders:

What Families Should Know

Tom Rader, M.S., CCC-SP
Barbara Rende, M.S., CCC-SP

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About the Authors

Barbara Rende, M.S., CCC-SP, is a licensed speech pathologist working with neurologically impaired adults in a rehabilitation unit nursing center in Salem, Oregon. Her practice has concentrated on elderly stroke and head trauma patients, and the speech and swallowing disorders they frequently experience. She received the M.S. degree in Speech and Hearing Sciences from the University of Arizona.

Tom Rader, M.S., CCC-SP, has almost 20 years experience in speech pathology, with a special emphasis on swallowing disorders and asphasia. Owner of the Salem Speech and Language Center, Salem, Oregon, his practice includes direct treatment of patients, continuing education workshops for professionals, and consultation. Mr. Rader received the M.S. degree in Speech Pathology from the Oregon College of Education. In addition to his speech-language credentials, he holds both Oregon and California state teaching certificates.

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Swallowing Disorders: What Families Should Know

A swallowing problem—*dysphagia*—is one of the many disorders that can occur as a result of a catastrophic illness or injury. The problem may be mild, or so severe that the patient cannot take nourishment by mouth and must be fed by other means.

In the presence of a life-threatening illness, a swallowing problem sometimes is considered of secondary importance. However, if the problem is not quickly recognized and safe swallowing guidelines are not strictly followed, the patient's recovery may be jeopardized.

When a patient has a swallowing disorder, there is always the danger that food or liquid will go into the lungs rather than into the stomach. This is known as *aspiration*. Aspiration in turn can cause pneumonia. The occurrence of another serious illness in an already debilitated person will complicate the patient's recovery, and in some cases lead to death.

Families may have difficulty understanding why swallowing guidelines (such as witholding favorite foods or in some cases water) are necessary. This booklet will explain why swallowing precautions are recommended by the rehabilitation team and outline the family's role in helping the patient recover.

Case History

John Alexander suddenly stopped eating his dinner and spoke to his wife with slurred, unintelligible speech. She noticed that he was slumping to the right and his face was distorted. Food was drooling from the right side of his mouth. Like many elderly people, Mr. Alexander had suffered a stroke.

At the hospital, a doctor explained to Mrs. Alexander that her husband would have a long recovery period, but that nursing and therapeutic care would help him regain many of his abilities. It was explained that Mr. Alexander was having difficulty swallowing and consequently was in danger of aspirating, or getting food or liquid in his lungs. To avoid this, a feeding tube, called a nasogastric (NG) tube, would be placed into his stomach by way of his nose and throat. He would be fed through this tube until he regained his ability to swallow.

Mr. Alexander slowly improved and became more alert as the days passed. Although he appeared to be swallowing his own secretions, his drooling continued, and the sign on his door read NPO, or "nothing by mouth."

A speech pathologist visited the following week and arranged for a videoflouroscopy, an x-ray examination that uses video tape, to evaluate Mr. Alexander's swallowing. The videoflouroscopy showed that he had a delayed swallowing reflex and was in danger of aspirating thin liquids. Based on this information, a treament program was begun that included withholding thin liquids from his diet, thermal stimulation of his swallowing reflex, and teaching him safe swallowing procedures.

The video study showed it was safe for Mr. Alexander to start taking thick pureed foods by mouth, providing he followed certain precautions when eating. These precautions included sitting up when eating, taking half-teaspoon bites of food, swallowing two times for each bite, and tilting his head slightly forward and to the left. These precautions were individually designed for Mr. Alexander, using the information from the videoflouroscopy. The speech pathologist emphasized the need for careful monitoring during meals and that feeding was only to be done by professional staff.

Mr. Alexander improved enough to take sufficient nutrition by mouth, and his NG tube was removed. Although able to swallow thick liquids and ground foods, he still choked on thin liquids, and these continued to be withheld from his diet.

Another videoflouroscopy will be done in one month to determine if his swallowing abilities have improved and if his diet consistency, including liquids, can be changed. Until that time the thermal stimulation program will be continued.

What Is a Swallowing Disorder?

Normal swallowing involves a complex sequence of movements requiring precise muscle control. These movements occur rapidly, with food or liquid only taking two or three seconds to pass from the back of the mouth to the stomach.

Swallowing becomes a problem when an impairment reduces a patient's ability to get adequate nutrition by mouth, or when it raises the danger of aspiration of foodstuffs into the lungs rather than the stomach. Aspiration in turn can lead to potentially life-threatening illness.

There are three stages in the swallowing sequence.

Stage One
The first part of the swallowing sequence takes place in the mouth. The tongue moves the food or liquid into a cohesive mass and then, with a pushing action, places it at the back of the mouth, where the swallowing reflex is triggered. While the tongue is working, the lips form a tight seal to prevent food or liquid from spilling out (see Figure 1).

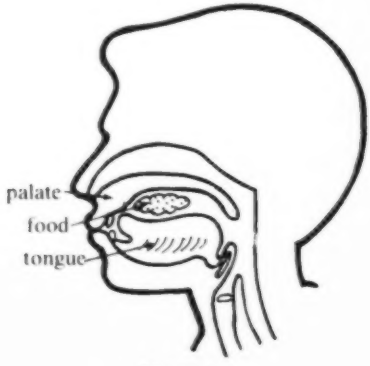

Figure 1
Normal Swallowing

A swallowing disorder occurs when there is decreased sensation, muscle strength, or voluntary control of the tongue, lips, or other oral structures. Reduced oral strength, control, or sensation can cause food or liquid to fall into the throat before the swallow reflex is triggered and cause aspiration into the open airway to the lungs. These weaknesses also can lessen a patient's ability to begin the swallowing sequence, and therefore limit the amount of nourishment taken by mouth.

Stage Two

The second stage of the swallowing sequence occurs when the swallowing reflex is triggered and the food or liquid moves into the throat. Once the reflex is triggered, breathing momentarily stops and the airway is closed to prevent food or liquid from passing into the lungs (See Figure 2).

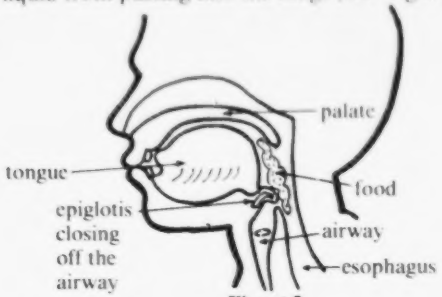

Figure 2
Normal Swallowing

In this stage, a swallowing disorder could cause the swallowing reflex to be delayed, incomplete, or absent. Food or liquid then can become trapped in the throat, in small pockets called "sinuses" which can hold about one half teaspoon of food or liquid. If more than a small amount is trapped in the throat it can spill into the airway and result in aspiration when breathing resumes (see Figure 3).

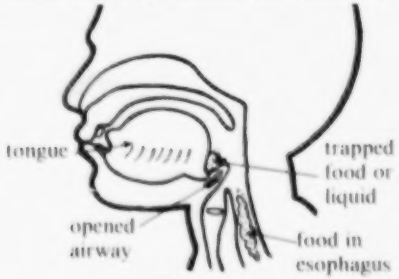

Figure 3
A Disordered Swallow with Food Trapped in Throat

It is for this reason that it is important for a patient with a swallowing disorder to take only small bites and swallow completely before taking another bite.

Stage Three

The third and final stage of the swallowing sequence occurs when food or liquid passes from the throat into the esophagus. The esophagus is the tube through which food and liquid reach the stomach. Pockets or strictures in the esophagus also can cause swallowing problems, and must be treated medically or surgically (see Figure 4).

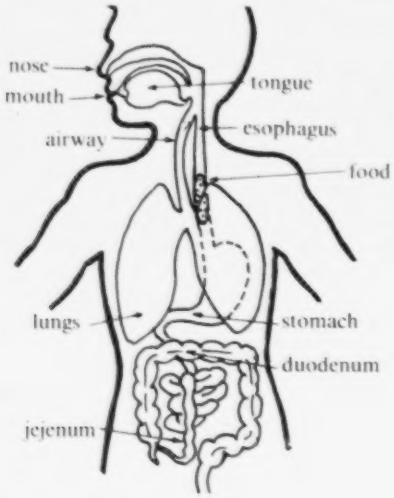

Figure 4
Normal Esophageal Phase of Swallowing

Symptoms of a Swallowing Disorder

- Excessive mouth movement during chewing and swallowing
- Difficulty starting a swallow
- Coughing or choking *while* eating or drinking
- Coughing or choking *after* eating or drinking
- Needing to swallow two or three times
- Food remaining on tongue after swallowing
- Pocketing of food on one side of mouth
- Excessive drooling, especially immediately after eating
- A large amount of extra secretions
- Gargley-sounding voice after eating or drinking
- Increased body temperature of unknown cause
- Pneumonia
- Chronic respiratory distress

Medical Conditions Associated with Swallowing Disorders

- Surgical revision of the head and neck as the result of diseases such as cancer
- Head injury
- Stroke
- Multiple sclerosis
- Parkinson's disease
- Amyotrophic lateral sclerosis
- Myasthenia gravis
- Muscular dystrophy
- Any disease or injury that directly affects the oral mechanism, or damage to the brain that causes neurological impairment of swallowing.

Helping Patients with Swallowing Disorders

There are several treatments designed to improve swallowing. Patients can be taught exercises to increase oral muscle function and airway closure. Their swallowing reflex can be artificially stimulated to help strengthen it. They can learn to control the factors that make swallowing easier and decrease the risk of aspiration.

The following areas will be discussed in more detail:

exercises to improve swallowing
thermal stimulation
consistency of food and liquids
patient positioning
amount of food and liquid taken per swallow
time between swallows
sensory cues
environment

Exercises to Improve Swallowing

Patients with swallowing disorders often have paralysis or weakness of the muscles of the lips and/or tongue. There are a variety of exercises to help strengthen these muscles. There are also exercises to increase the tongue's range of motion, which is necessary to manipulate food and liquid in preparation for swallowing. A patient whose airway is not closing completely can be taught exercises to strengthen those muscles and improve closure during swallowing.

Thermal Stimulation

The ability to swallow is dependent upon the swallowing reflex — without it, swallowing is impossible. Because people with swallowing difficulties frequently have a weakened or delayed swallow reflex, treatment may include stimulating this reflex to increase its action.

Cold tends to enhance the sensitivity of the swallowing reflex. In therapy, a cold instrument is repeatedly placed at the back of the mouth to strengthen and encourage more rapid triggering of this reflex. This treatment must be done several times each day for two to four weeks before changes are observed.

Food Consistency

Once the type and severity of the swallowing problem have been evaluated, the food consistency that is easiest and safest for the patient to swallow can be determined. Food consistency varies from pureed to regular, with purees being the easiest to swallow. Patients frequently begin with pureed foods and progress in stages toward a more regular diet. Examples of food consistencies are included in Appendix A.

Liquids

Liquids also vary in consistency and usually are classified as thick (such as fruit sauces), semi-thick (fruit nectars), and thin (fruit juices).

Thin liquids, particularly water, are the most difficult to swallow because they require precise tongue control to collect and hold them against the roof of the mouth until the swallowing reflex is triggered. In addition, water's lack of taste makes it difficult for the patient to determine its position in the mouth, and therefore control it.

Patients with swallowing disorders often are not allowed to have thin liquids, including water, because of the high risk of aspiration. In these cases, their diets are adjusted to provide adequate liquid intake through other sources (for example, thick liquids and purees with high liquid content). If a dry mouth becomes a problem when a patient does not drink water, it may be alleviated by frequent oral cleaning and use of a saliva substitute. Examples of liquids of different consistencies are included in Appendix A.

A Word About Water

It is important for the staff and family of a patient to be in agreement, and to support the swallowing program. The most common area of disagreement is the need to withhold water.

It is difficult and often uncomfortable for the patient to be without water by mouth. However, the decision to withhold water is based upon knowledge of the normal swallowing

process and the individual patient's swallowing disorder. It is not made arbitrarily, but rather to help the patient avoid the more serious consequences of aspiration and pneumonia.

The patient needs reminders and frequent encouragement from both staff and family members to observe the precautions of the swallowing program in order to avoid further medical complications.

Amounts of Food and Liquid

For patients with weakened tongues and oral muscles, small amounts of food and liquid are the easiest to move into position for swallowing.

For patients with delayed or incomplete swallows, (where food remains trapped in the sinuses of the throat), eating small amounts of food and drink makes it less likely these substances will spill into the airway and cause aspiration.

All swallowing disorder patients should be encouraged to take only small amounts of food and liquids.

Positioning

The best position for swallowing is sitting as upright as possible with the hips at a right angle to the trunk (see Figure 5). Never feed or allow a patient to eat lying down or in a reclining position, unless the speech pathologist specifically suggests these positions. Use pillows to support patients who are too ill to sit perfectly upright.

Positioning of the head also can be important in swallowing, and varies from patient to patient depending upon the type of swallowing problem.

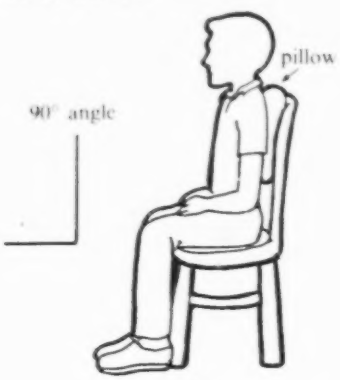

Figure 5
The Best Position for Swallowing

Time Between Swallows

Patients with weakened tongues and oral muscles need more time to move food and liquid into position for swallowing. Additional food or liquid should never be placed into the mouth until after the first mouthful has been swallowed.

Patients with delayed or incomplete swallowing reflexes need to be given extra time to allow the substances to pass through the throat into the esophagus.

Clearing the throat and swallowing repeatedly often helps move the food through the throat. But placing more food or liquid in the mouth before the first mouthful is swallowed means there will be additional food in the throat and a greater chance of it spilling into the airway and causing aspiration.

Because of these factors, it usually takes much longer than normal to eat a meal. Allow adequate time for feeding and never rush a patient with a swallowing problem. *Do not* place food in the mouth or allow the patient to take additional food before swallowing completely. Time and a little patience are required on the part of both the caregiver and the patient for successful feeding.

Sensory Cues

Sensory cues refer to the use of the five senses to facilitate a patient's swallowing. Cuing is part of teaching, and helps to decrease the risk of aspiration.

Cues can be verbal, such as the reminder, "swallow." Gestural cues might include a caretaker pointing to his or her own lips to remind the patient to maintain lip closure during swallowing. Physical cues can include actual support of a patient's chin or head to demonstrate correct positioning. Written cues provide constant reminders to the patient and caregivers to follow swallowing precautions. Taste and food temperature also can cue a person to swallow. Cold tends to stimulate the swallowing reflex and hot liquids are a cue to go slowly and sip the drink.

Environment

Normally, eating and swallowing are routine activities not requiring much thought. A person with a swallowing problem, however, must pay very close attention to what must be done in order to facilitate swallowing and avoid aspiration.

Because of this, it is important that patients with swallowing difficulties eat in a quiet envionment free of distractions. Talking and socializing during meal time can cause the patient to forget to follow the swallowing guidelines.

Videoflouroscopy

Patients with swallowing disorders are often referred to a radiologist for a videoflouroscopic study of their swallowing abilities.

Videoflouroscopy is an x-ray study of a swallow recorded on videotape. By allowing the professional to actually see "material" being swallowed, it provides information that cannot be obtained from clinical (bedside) examination of the patient. It shows where the swallowing difficulty is occuring, how changes in positioning and consistency of food affect swallowing and if the patient is aspirating.

Specific swallowing guidelines and treatment techniques can be devised based upon the information obtained from a videoflouroscopic study.

Alternative Means of Feeding

If a patient's swallow is so severely impaired that adequate nutrition cannot be received by mouth, an alternative means of feeding probably will be necessary.

The three main types of alternative feeding techniques follow.

Nasogastric Tube

When a patient cannot take food by mouth, a temporary means of feeding is the nasogastric (NG) tube. This tube is passed through the nose and throat, down the esophagus and into the stomach. The patient receives a high nutrition liquid through this tube several times a day (see Figure 6).

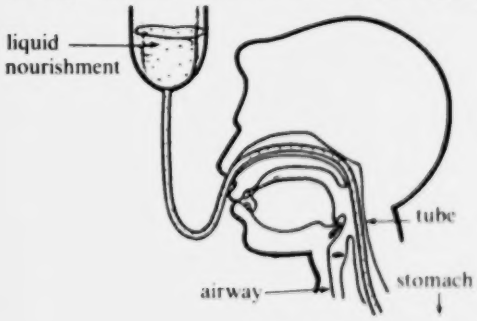

Figure 6
Placement of a Nasogastric Tube

Patients are still able to swallow and participate in swallowing treatments despite the tube. Some patients with feeding tubes may be able to take food by mouth; this depends upon the individual's risk of aspiration.

Some patients regain their ability to swallow even while the tube is in place, while others may require permanent placement of an alternative feeding method.

IVs and Hyperalimentation
Nutrition also can be sustained by infusing nutrients directly into the blood. Intravenous (IV) feeding involves placing a needle into a vein, usually on the arm. In hyperalimentation, nutrients are fed directly into the vena cava, a main vein near the neck.

Gastrostomy
A more permanent means of feeding is a gastrostomy tube. In a surgical procedure, a feeding tube is placed through the abdominal wall and directly into the stomach. This tube can be removed and the incision healed over if the patient regains the ability to take food by mouth (see Figure 7).

Figure 7
Placement of a Gastrostomy Tube

What the Family Can Do

- Become familiar with the patient's individualized swallowing program and follow the guidelines carefully.
- Communicate with the staff.
- Give the patient support and encouragement to participate in the swallowing program.
- Offer only foods and liquids that are of the consistency recommended by the speech-language pathologist.
- Remember the patient needs to be sitting upright when eating unless other specific recommendations have been made.
- Encourage the patient to take small amounts of food.
- Allow sufficient time for eating.
- Be sure the patient has swallowed completely before taking more food.
- Stop feeding immmediately if the patient chokes.
- Leave the patient sitting for 20 to 30 minutes after eating.

In Summary

When a person has a swallowing disorder, it takes time to adjust to the many changes that result. During this period, family members can help the patient by offering support and encouragement. This includes being educated about the reasons for specific swallowing precautions, so as to better help the patient cope during this period of recovery.

APPENDIX A
Examples of Food Consistencies

Pureed Diet. This is the most easily swallowed diet. All foods are blended to a smooth consistency, and no chewing is required. When pureed food is the right consistency, a spoon will stand upright in it.

Chopped Diet. All meats and vegetables are finely chopped, requiring minimal to moderate chewing. Salads are either finely chopped or pureed. All fruits are pureed.

Soft Easy-Chew Diet. All foods are of normal consistency but of low fiber, requiring only moderate chewing effort and a good, safe swallow.

Thin liquids include:

- water
- coffee
- tea
- grape juice
- grapefruit juice
- orange juice
- apple juice
- pineapple juice
- cranberry juice
- milkshake
- milk
- gelatin
- broth
- sherbet
- soda pop

Semi-thick liquids include:

- buttermilk
- eggnog
- pureed fruit juices
- strained cream soup
- ice cream
- thickened milkshakes (with yogurt)
- apricot nectar
- prune juice
- vegetable juices

Thick liquids include:

- pureed fruit sauces
- Katie drink
- creamed soup (thickened with mashed potatoes)

APPENDIX B
Glossary of Terms

Airway. Natural passageway for air moving to and from the lungs. It is closed when the swallowing reflex is triggered.

Aspiration. The passage of foreign material, such as food and liquid, into the lungs.

Delayed swallow. The swallowing reflex is not immediately triggered when the food or liquid reaches the back of the mouth.

Dysphagia. Inability to swallow or difficulty in swallowing.

Esophagus. Muscular tube extending from the throat to the stomach. It carries swallowed foood and liquids to the stomach.

Gastrostomy. Surgical creation of a passage through the abdominal wall for the purpose of introducing a feeding tube into the stomach.

Hyperalimentation. The introduction into a vein of a solution that contains sufficient nutrition to sustain life.

Incomplete swallow. Food or liquid remains in the mouth or throat after the swallowing action stops and the airway opens.

Nasogastric tube. A tube inserted through the nose that extends into the stomach for the purpose of providing nutrition.

NPO. An instruction used in patient care to indicate that the patient is to take absolutely nothing by mouth: food, liquid or medicine.

Swallowing reflex. The swallowing reflex is triggered when the back of the tongue pushes the food or liquid against the arches at the sides of the throat.

Videoflouroscopy. An x-ray study recorded on video tape.

Resources

Professionals to contact about swallowing problems:

Name and title: _____

_____

_____

Phone number: _____

Notes or Other Resources

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